Version

1.0

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CONNECTICUT
DEPARTMENT OF TRANSPORTATION

AEC Applications – Division of Facilities & Transit

# CT DOT *StormCAD* V8i with *MicroStation* V8i Start-up Workflow

Section 1   Getting Started

Easy Storm Sewer Design and Modeling

StormCAD provides comprehensive modeling for the design and analysis of storm sewer systems. StormCAD is **FEMA-approved** and provides calculations for catchment runoff, gutters, inlets, junctions, pipe networks, and outfalls, and its intuitive interface makes the design and analysis of storm sewer systems easier.

StormCAD software is ***approved by the Departments Hydraulics and Drainage Unit*** to use for roadway storm sewer design. It is the designer's responsibility to adhere to the CTDOT Drainage Manual.

On your desktop or under the Start → All Programs → Bentley → StormCAD V8i are two StormCAD V8i programs. **StormCAD V8i for MicroStation V8i** (preferred use) or **StormCAD V8i**, both are standalone programs, no need to go through Accounting.
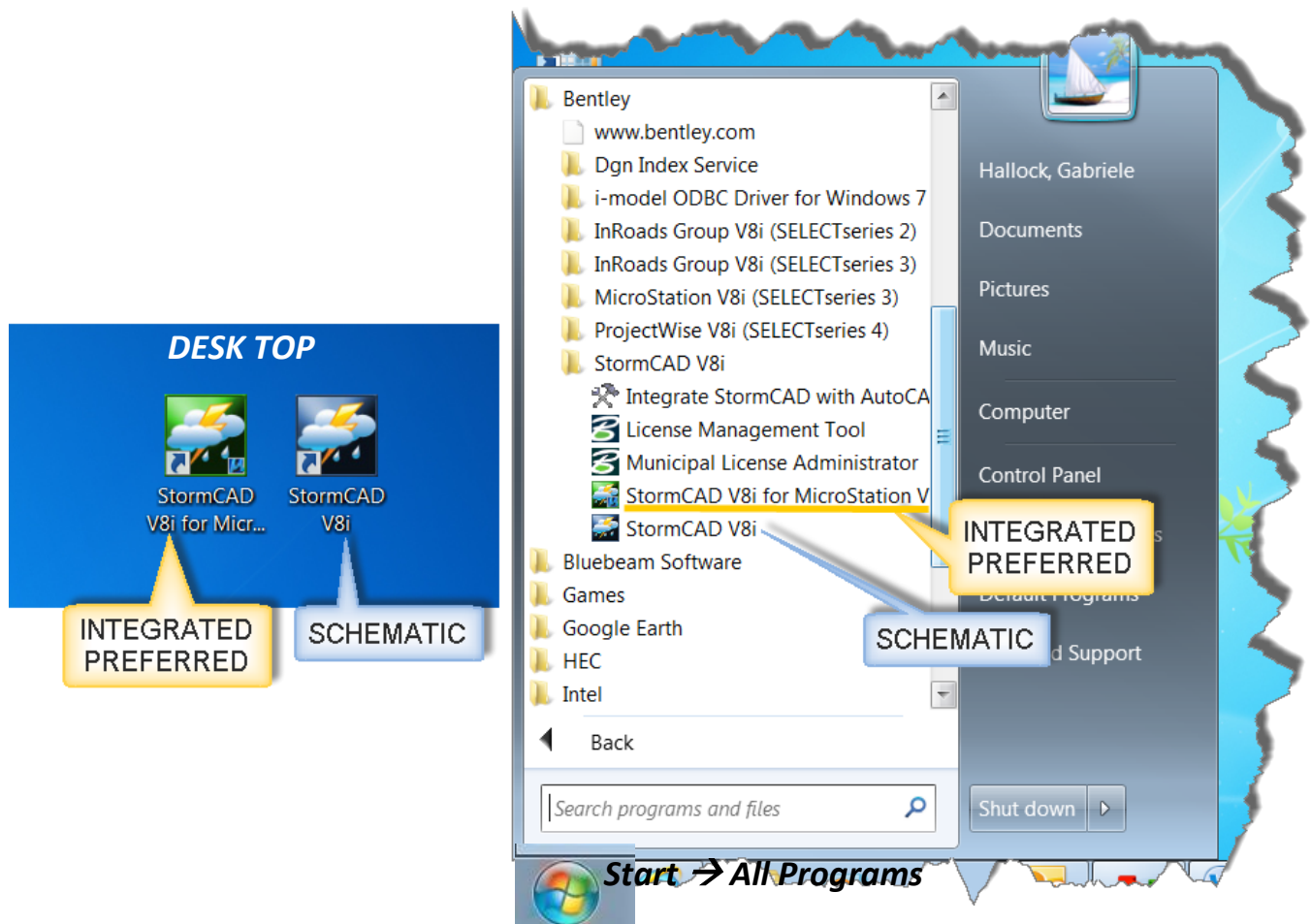
DO NOT open other MicroStation files in the Project X-Drive container while in StormCAD V8i for MicroStation.

DO NOT open the newly created StormCAD V8i for MicroStation file through Accounting.

DO NOT open MicroStation through Accounting and then add StormCAD V8i as a MDL.

DO NOT use the project design file(s) as your drainage design file while in StormCAD V8i for MicroStation.

ALWAYS follow the *CTDOT MicroStation V8i Guide for Highway Designers*.

DO enter MicroStation through Accounting as normal and reference the StormCAD V8i MicroStation file in to your project design file(s).

1.1 Starting StormCAD V8i Integrated with MicroStation

## 1.1.1 Use the Correct MicroStation User Configuration File

You will open StormCAD V8i for MicroStation as a standalone (not opening through Accounting) either from your desktop or from Start. Before you start up StormCAD it is necessary that you copy the latest Connecticut DOT user configuration file for StormCAD to your computer.

1. Using Windows Explorer **copy** the file:
   W:/Workspace/StormCAD_RSC/stormcad.ucf

2. **Paste** to **C:/Bentley_V8i/Workspace/Users**
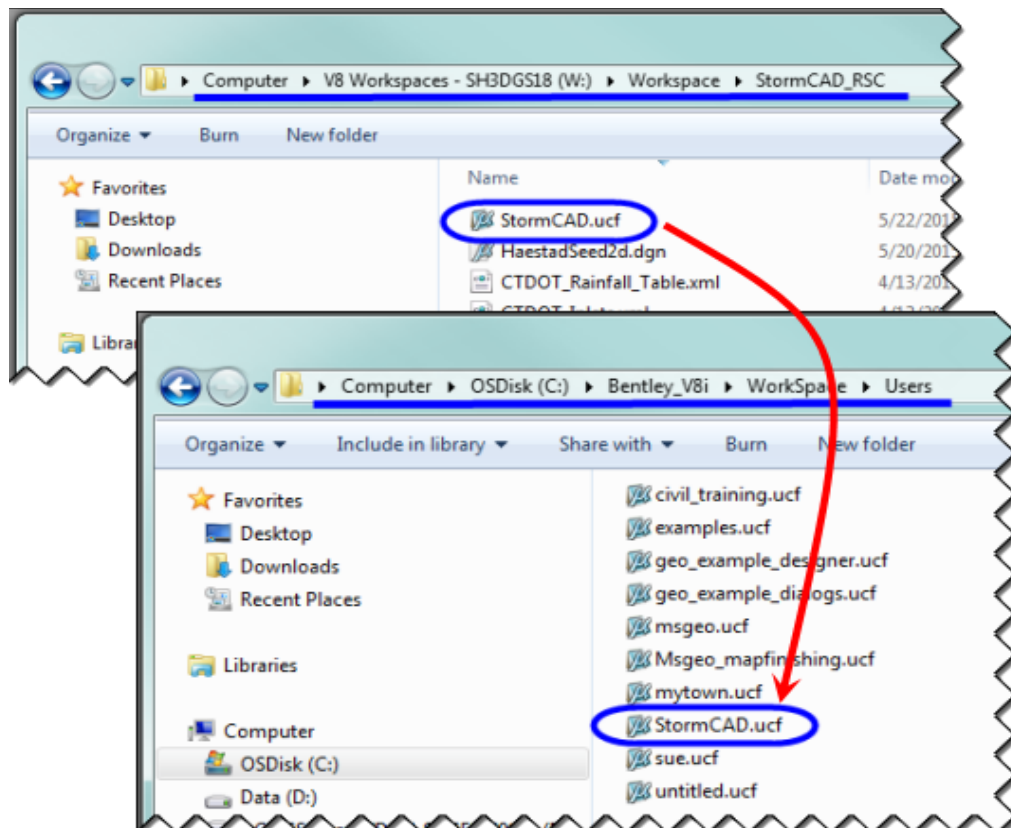
## 1.1.2   Start StormCAD & Create MicroStation File

A. To open StormCAD **double click** the ***StormCAD V8i for MicroStation V8i*** icon located on your desktop (or click on START > All Programs > Bentley > StormCAD > StormCAD V8i for MicroStation V8i)

B. Change the MicroStation Interface to StormCAD as shown below:
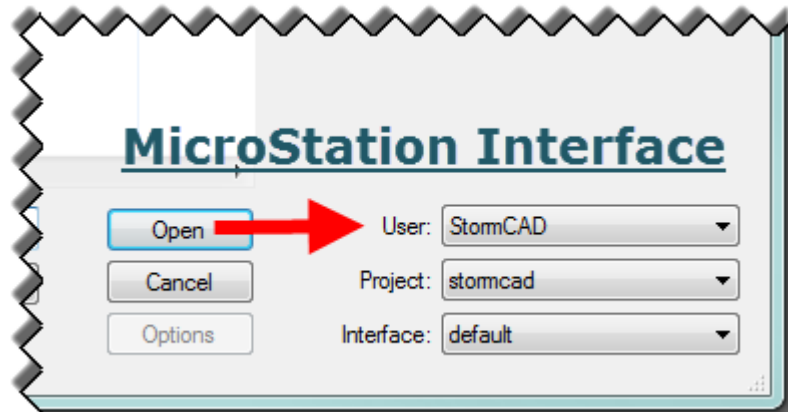
C. In the MicroStation File Manager box, select your X-drive project folder > Highways > _Eng_Data_/Drainage/ and select (click) the **New File** icon as shown:
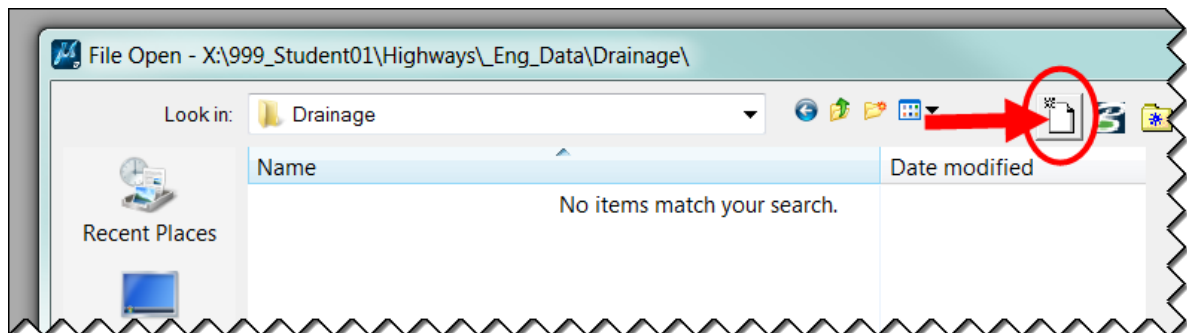

D. In the New file box, click on **Browse** (to select the seed file) and go to: **W:\Workspace\StormCAD_RSC\HaestadSeed2d.dgn** and click **Open**. It is important to use this seed file. Our CTDOT seed files have custom properties attached to it that will not work with StormCAD.
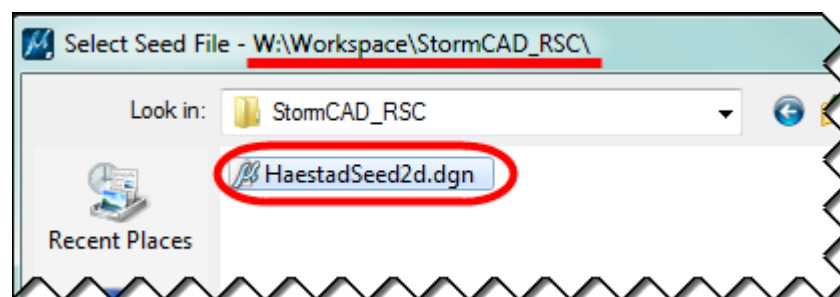
E. Type in the file name using file naming conventions in Appendix C of the CTDOT_DDE_Guide, example: **HW_MST_1234_1234_StormCAD_Sys-01.dgn**, select the file just created and click **Open**. StormCAD files should be in the -\Highways_Eng_Data\Drainage folder.
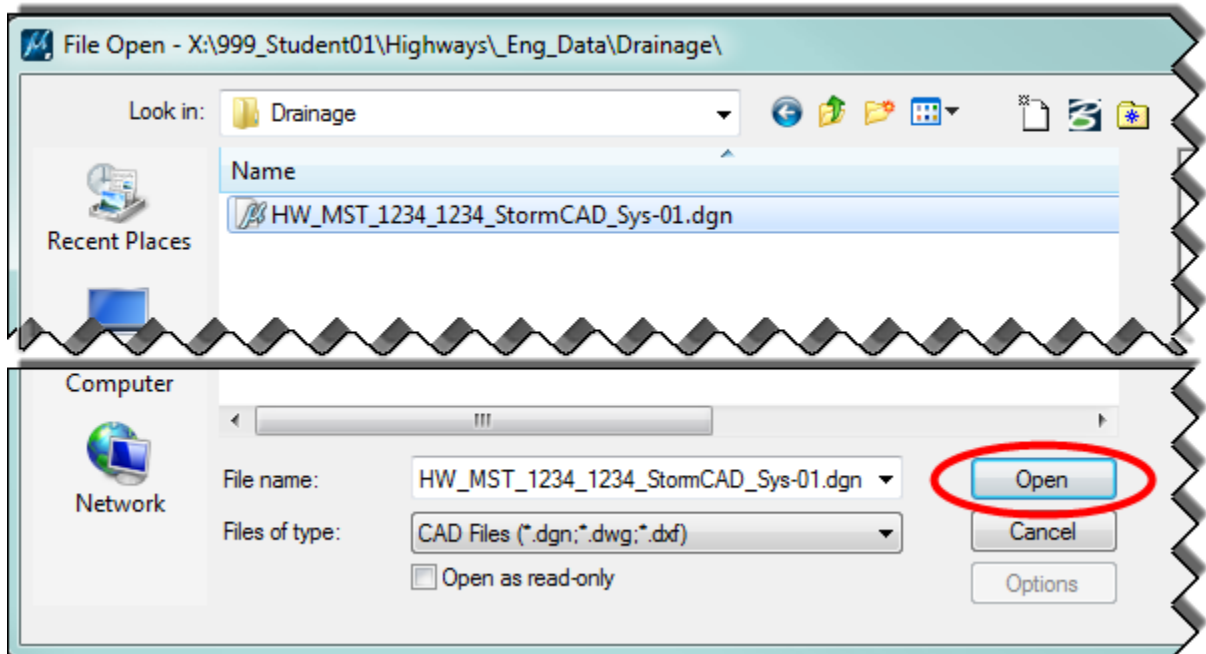
F. After the MicroStation file is opened, **reference** in files as needed. **Turn Off** True Scale and make sure scales are 1 to 1. **Turn Off** Levels as needed. **Save Settings**.
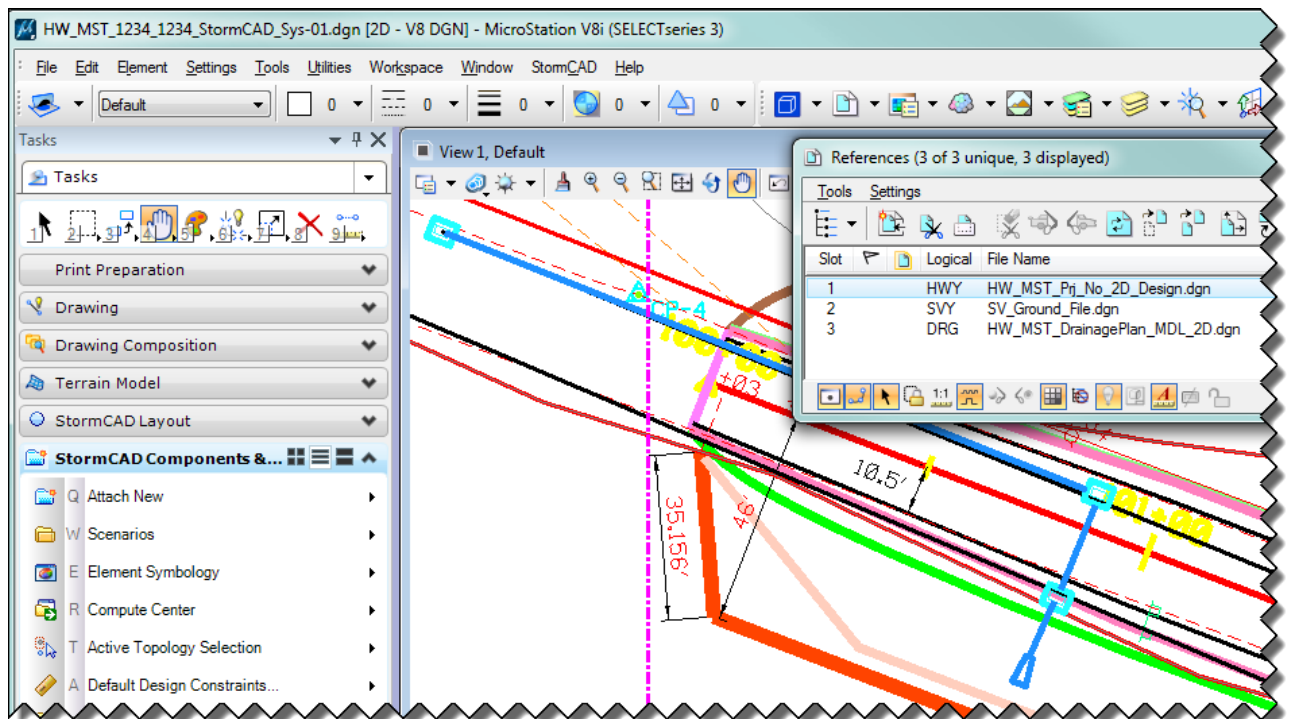
Section 2   Create new StormCAD Project

StormCAD requires certain information that the engineer has to input, such as Time of Concentration (T_c) and Drainage Area (A). It is a good idea to calculate those before starting with StormCAD; also drawing the drainage system(s) first in the Drainage_MDL file (through Accounting, see IMPORTANT GUIDELINES FOR USING STORMCAD V8I FOR MICROSTATION, and then reference this file into your StormCAD file.

2.1   Create Project Files

A. Within MicroStation Tasks, expand on **StormCAD Components**. Click left mouse button, hold down and select **"Attach New"** for new project/system click on "**Attach New**".
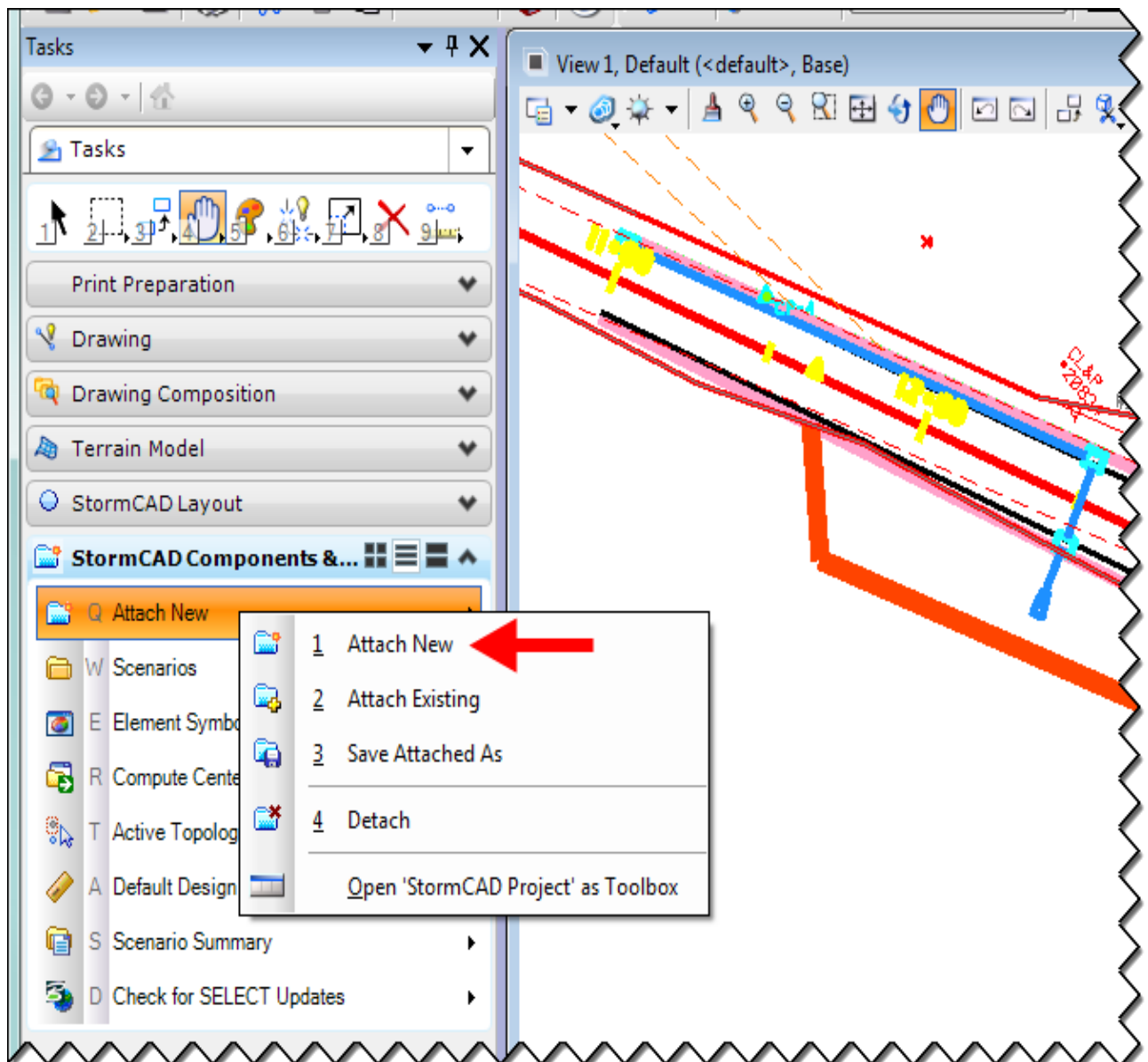
B. After you click "Attach New" the "**Save As...**" dialog box opens, type in a logical file name for your system, make sure you specify the folder (see below). And click "Save". StormCAD will create the files needed, you will see some screens pop-in and –out. Wait until StormCAD completed the start up.
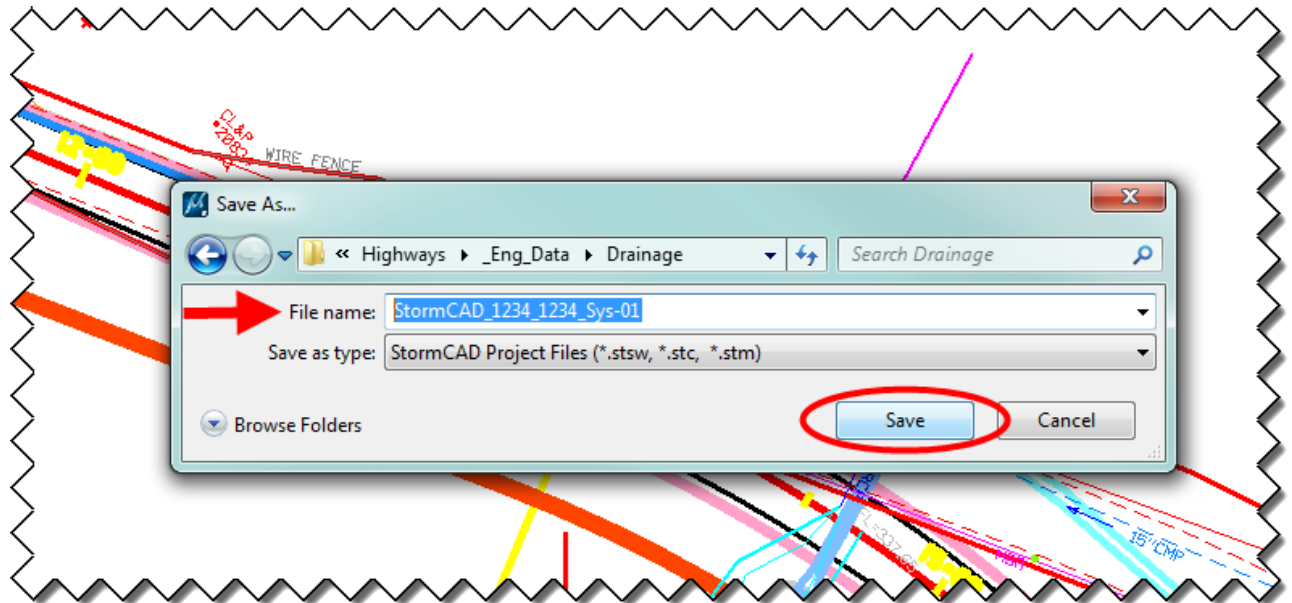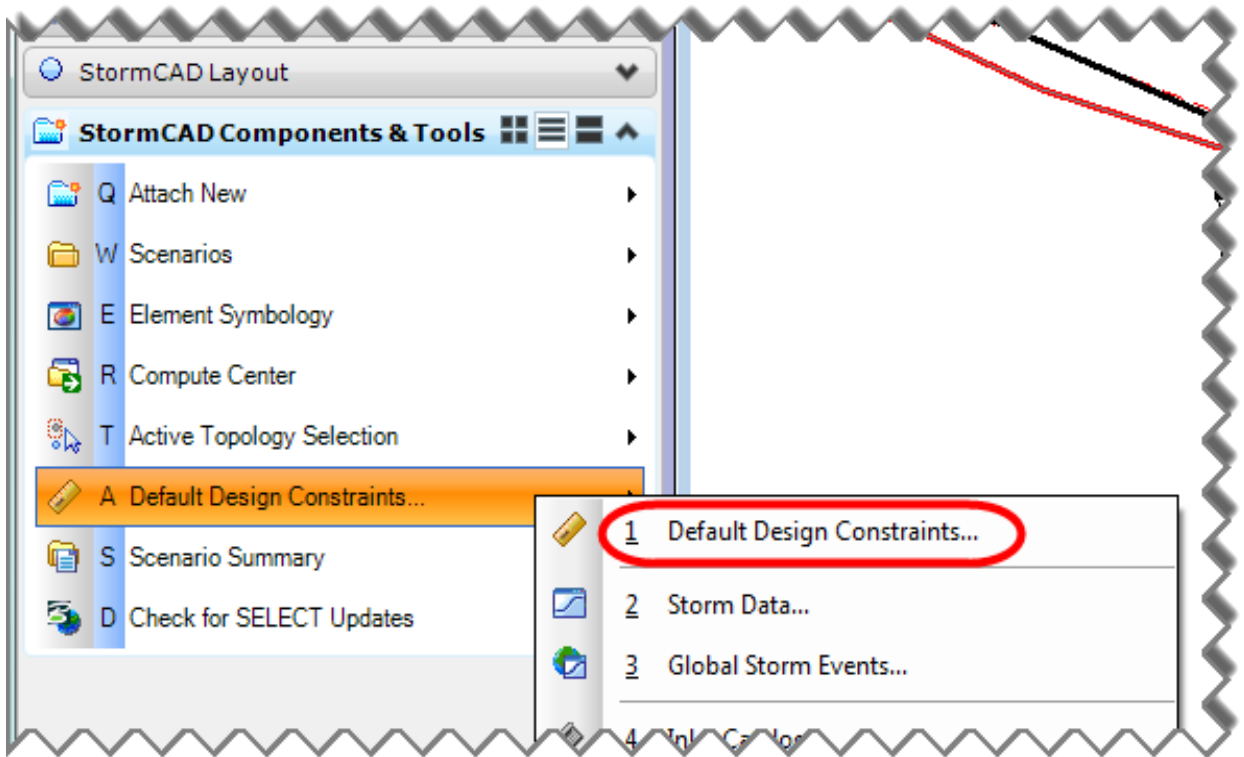

C. In Windows Explorer you can see the files created by StormCAD in the file folder you specified. Close Windows Explorer.
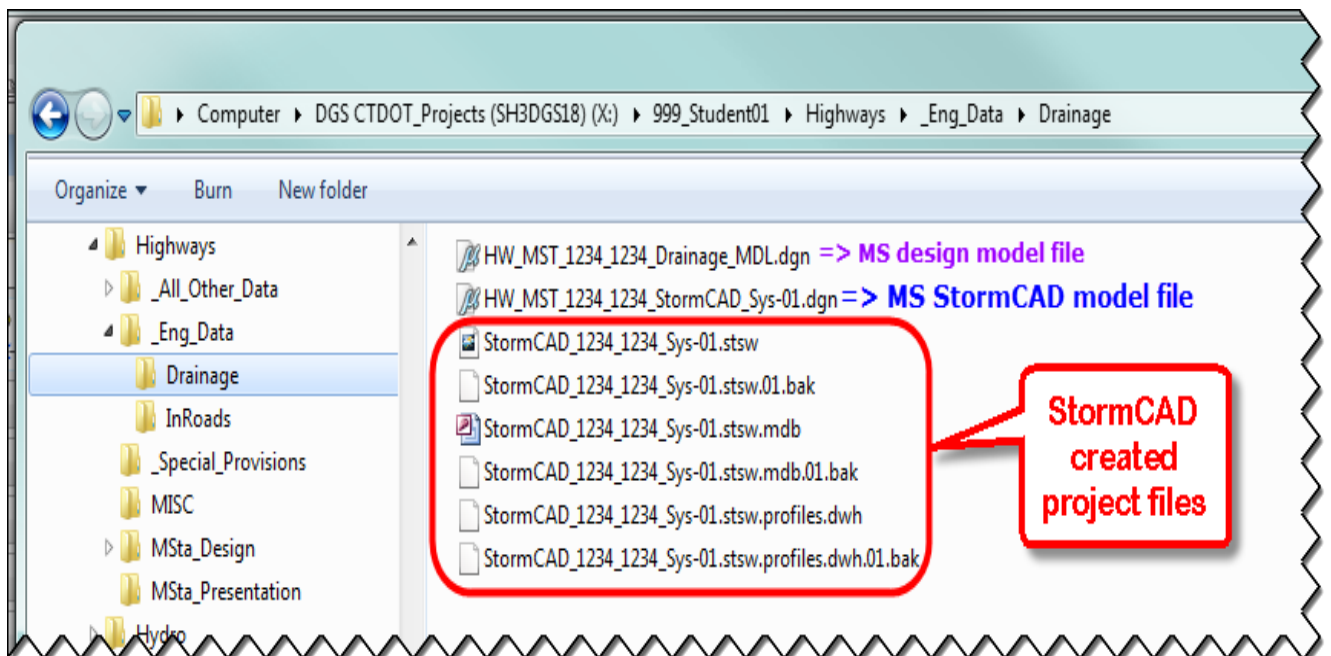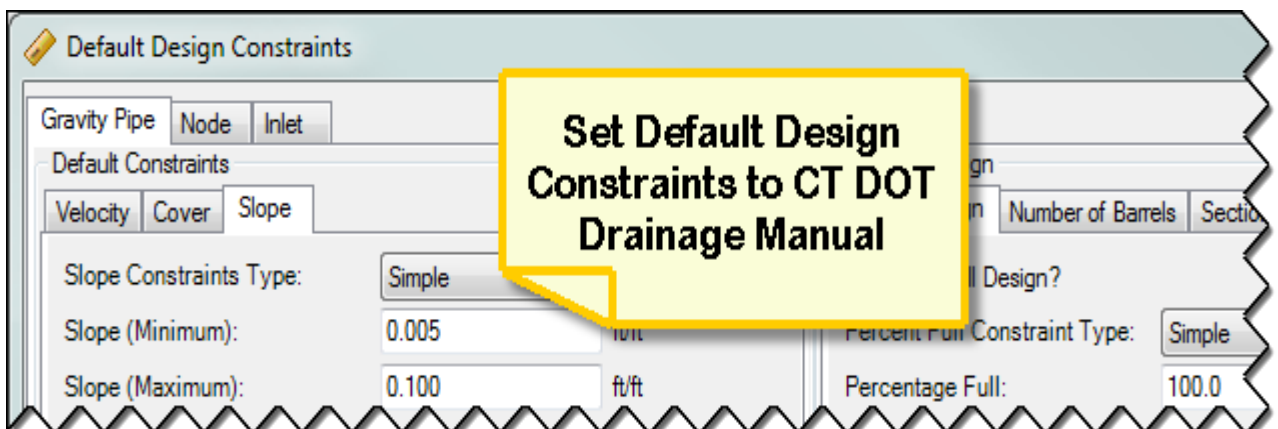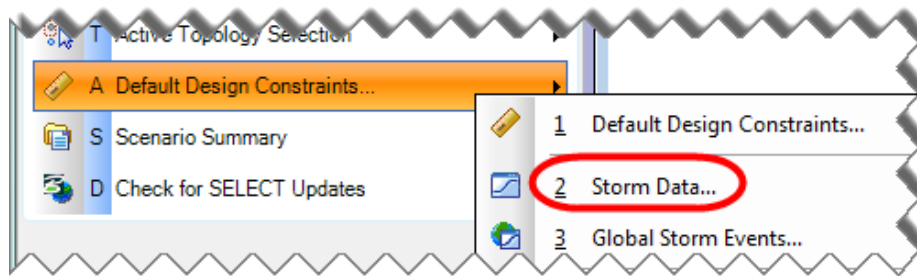
2.2 Set Project Defaults & Import Libraries

A. Next the Default Design Constraints are added. From the StormCAD Components & Tools click and **hold** Default Design constraints, **select Default Design Constraints**.
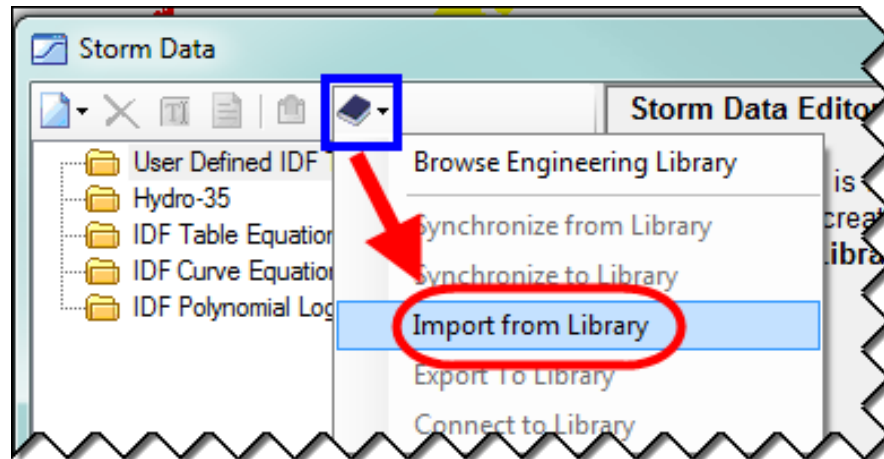

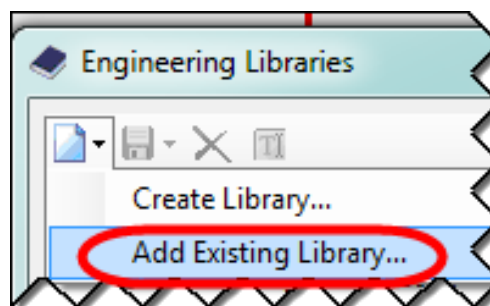B. Set the default design constraints according to the CTDOT Drainage Manual. **Close.**

C. Next you have to import the CTDOT_Rainfall_Table.xml. Click on **Storm Data...**

D. Click on the book icon = > **Browse Engineering Library.** Click on **Import from Library**
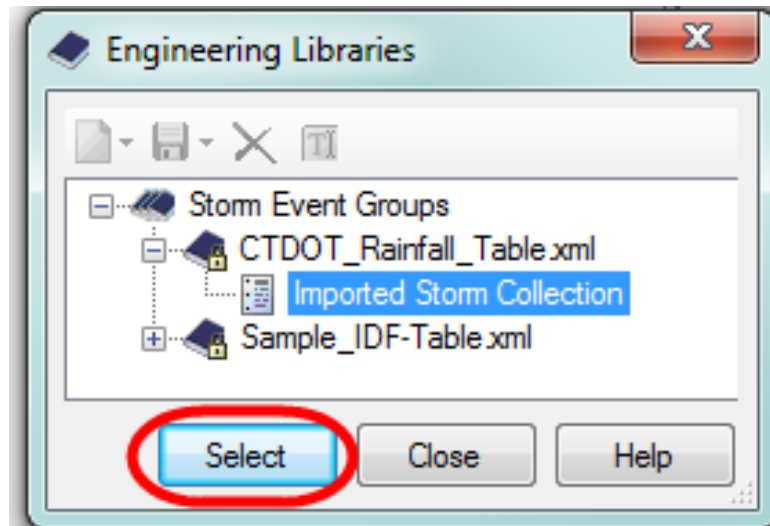

E. Click on **"New"** Icon (in the upper left corner) of the dialog box. Select **Add Existing Library...**


F. **Browse** to the Rainfall table XML Data. Select **W:\Workspace\StormCAD_RSC \ CTDOT_Rainfall_Table.xml** and click **Open**.

G. Next expand the **CTDOT_Rainfall_Table.xml**, click on **Imported Storm Collection**, click **Select**

H. In the Storm Data box expand the "User Defined IDF Table and click on the **Imported Storm Collection**. Under the **Storm Event Input tab**, the table and the profiles of the Storm collection data is populated. **Close.**
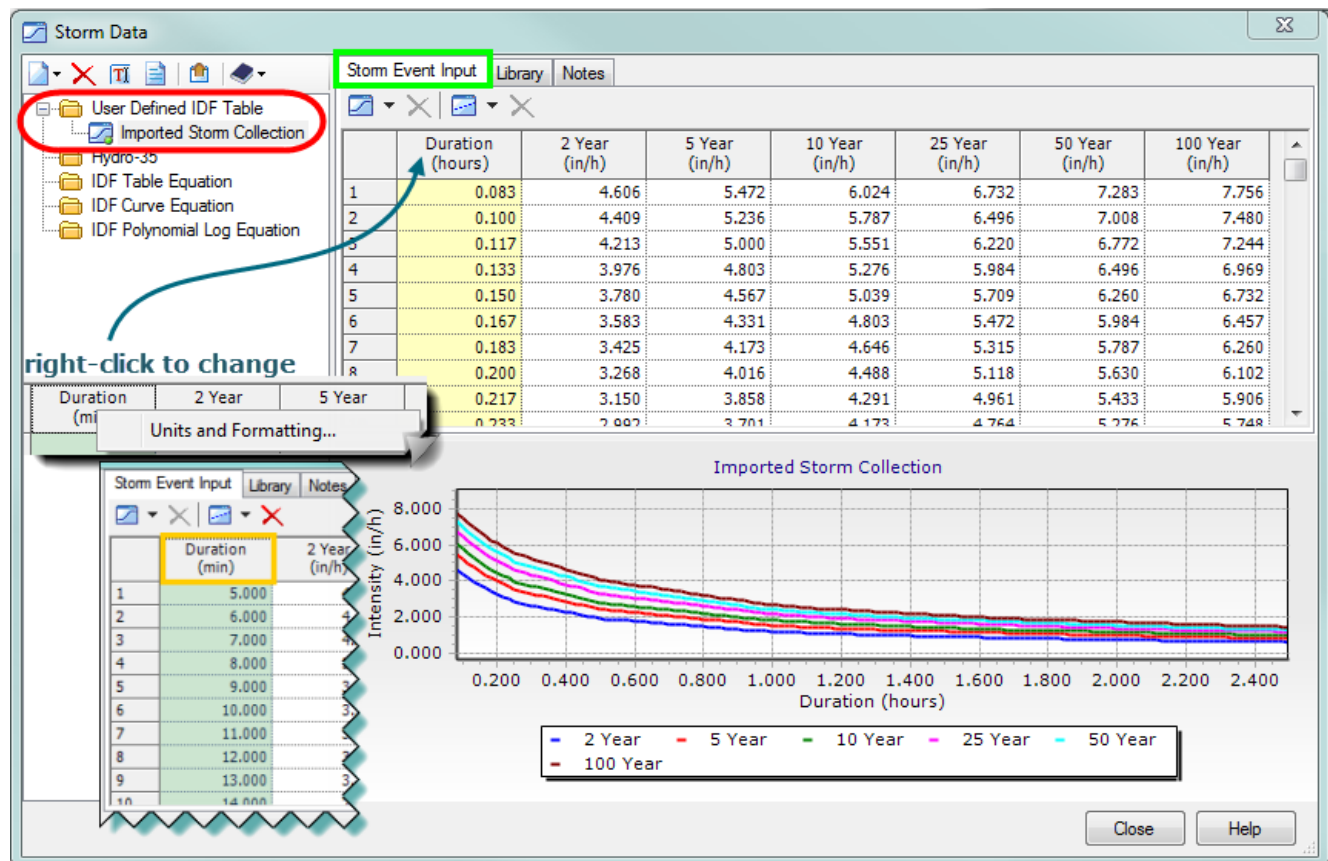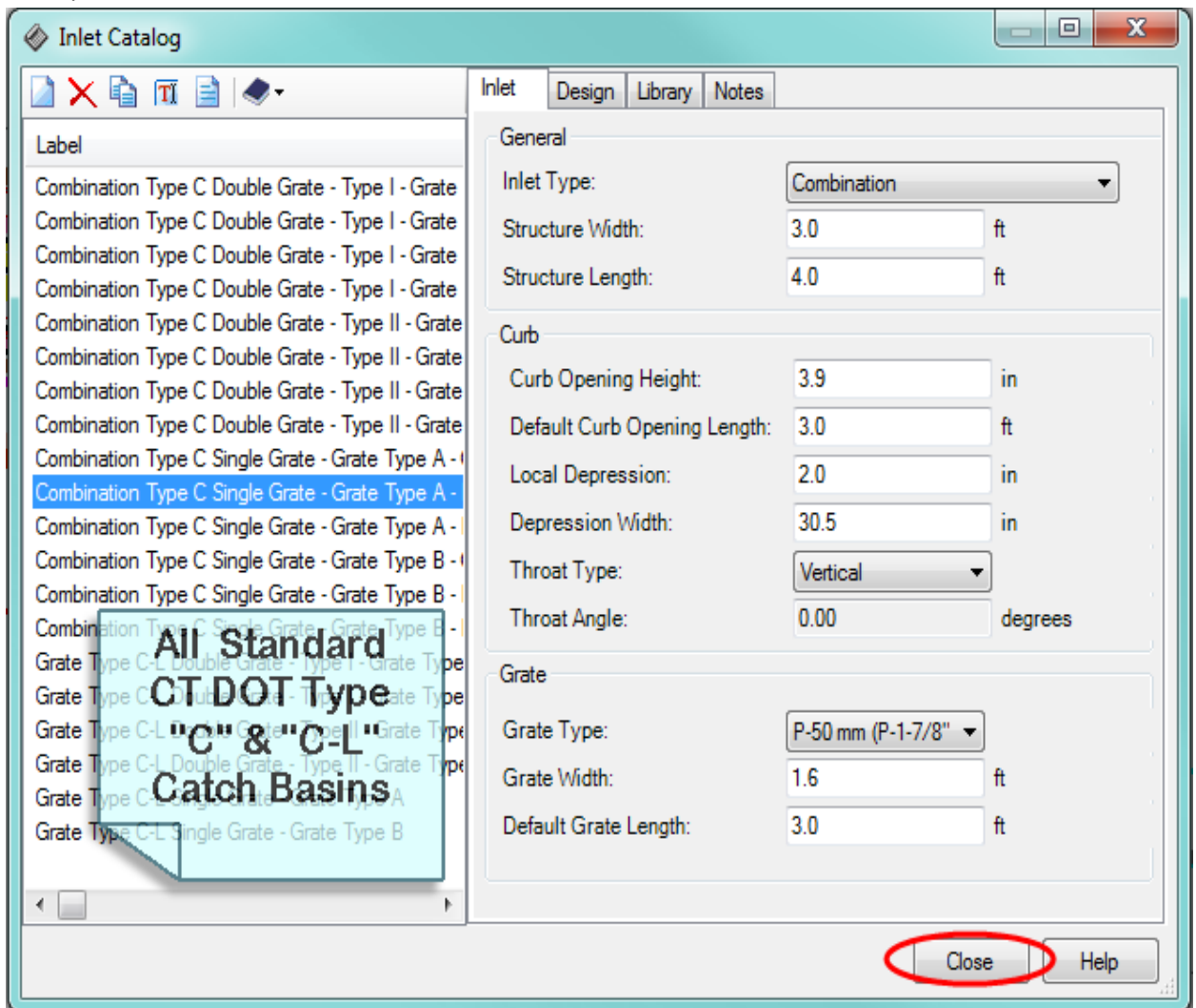
I. The second import is the Inlet Catalog. **Click** on **Inlet Catalog…** . Click on the **book icon** and click on **Import from Library**.
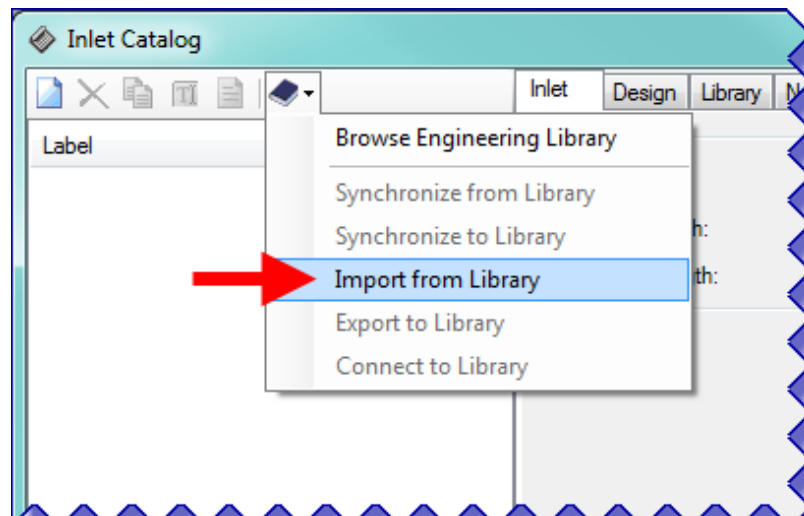
J. In the Engineering Libraries box expand the **Inlet Libraries folder.** **Check on** the **ct-inlets.xml** box. Click on **Select**. StormCAD will import all **ct-inlets. Close.**
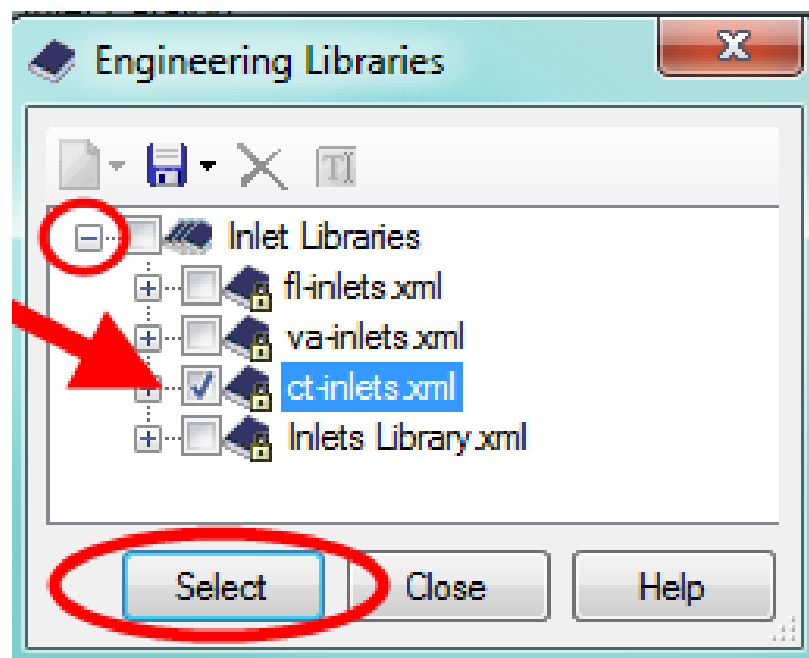
All imported CT DOT inlets.

K. Now you can import the Conduit Catalog, **check on** the **Conduit Library.xml.**
   (C:\ProgramData\Bentley\StormCAD\8\Libraries\Conduits Library.xml => default)

L. Again click on **Select.** StormCAD will import all conduits <u>or</u> **select all** 'Circular – Concrete' pipes <u>or</u>
   just **select few** as needed for the project. **Or** you can import pipes as needed later.

2.3   Set Project Properties & Options

A. From the MicroStation toolbar select **StormCAD → Project → Project Properties**. The Project Properties dialog box lets you enter project-specific information to help identify the project. Project properties are stored with the project. Click **OK**.
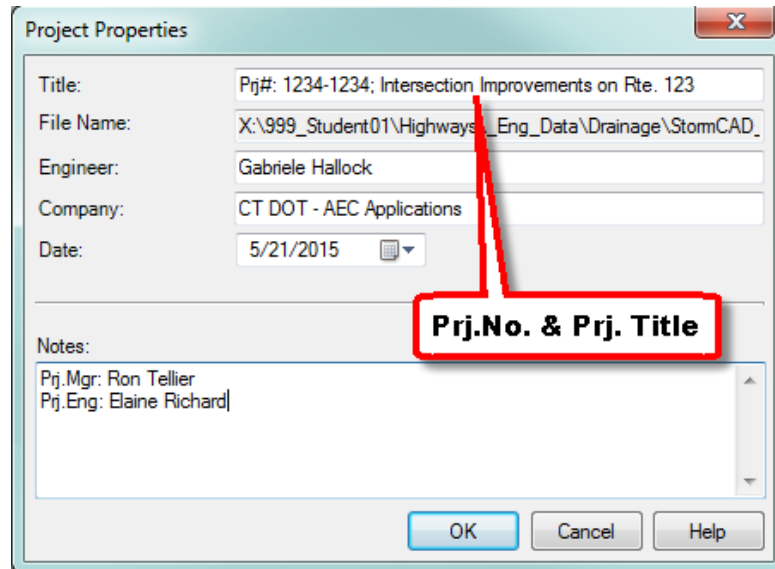

If this is the first time you are using StormCAD, we suggest you open the help menu. Click on **StormCAD → Help → Quick Start Lessons**. Follow the instructions to work your project / system scenarios or to learn using StormCAD. There is also help available on the *Bentley Learn Server*. Please contact Samantha Scharpf of AEC Applications (Samantha.Scharpf@ct.gov) for a learning path of StormCAD V8i.
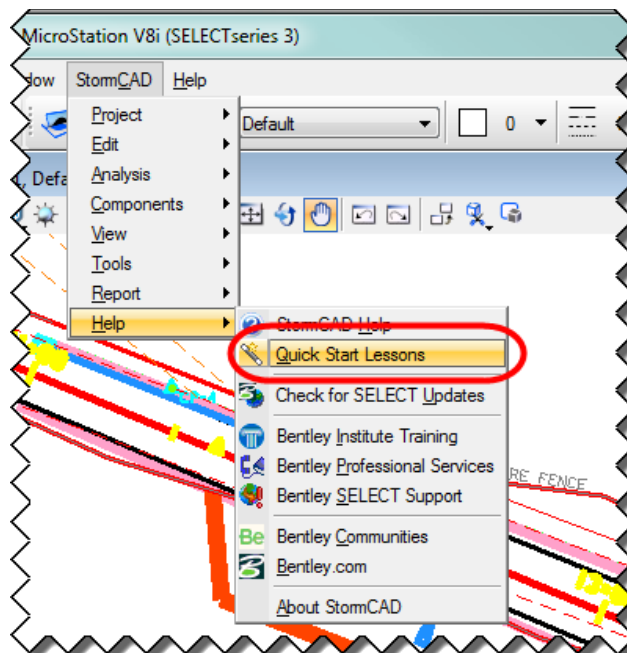
B. You already completed Part 1 of the Quick Start.
C. Now set *Drawing Mode* to **Schematic** and *Default Unit System* to **US Customary** (Part 2).

For the <u>scaled layout</u> please use the StormCAD V8i Help menu.
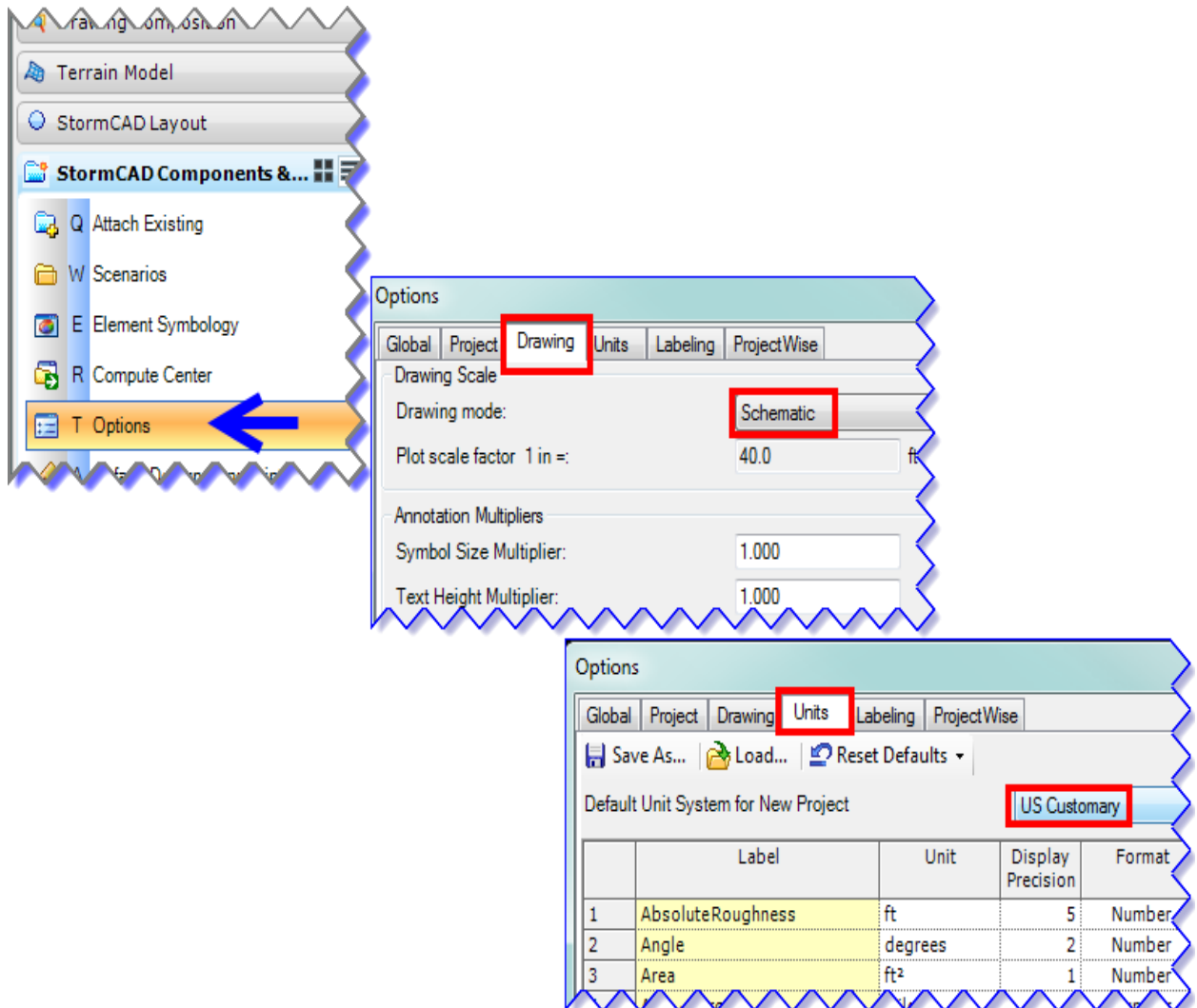
Section 3   Layout Storm Sewer System

A. Using the StormCAD Layout tools place your drainage structures and conduits as needed. Follow the Quick Start Lessons – Part 2.

B. Select **Catch Basin**, change the level to "Catchbasin" in the Attributes. Place the catch basin where you want it. Repeat as needed. StormCAD numbers everything.
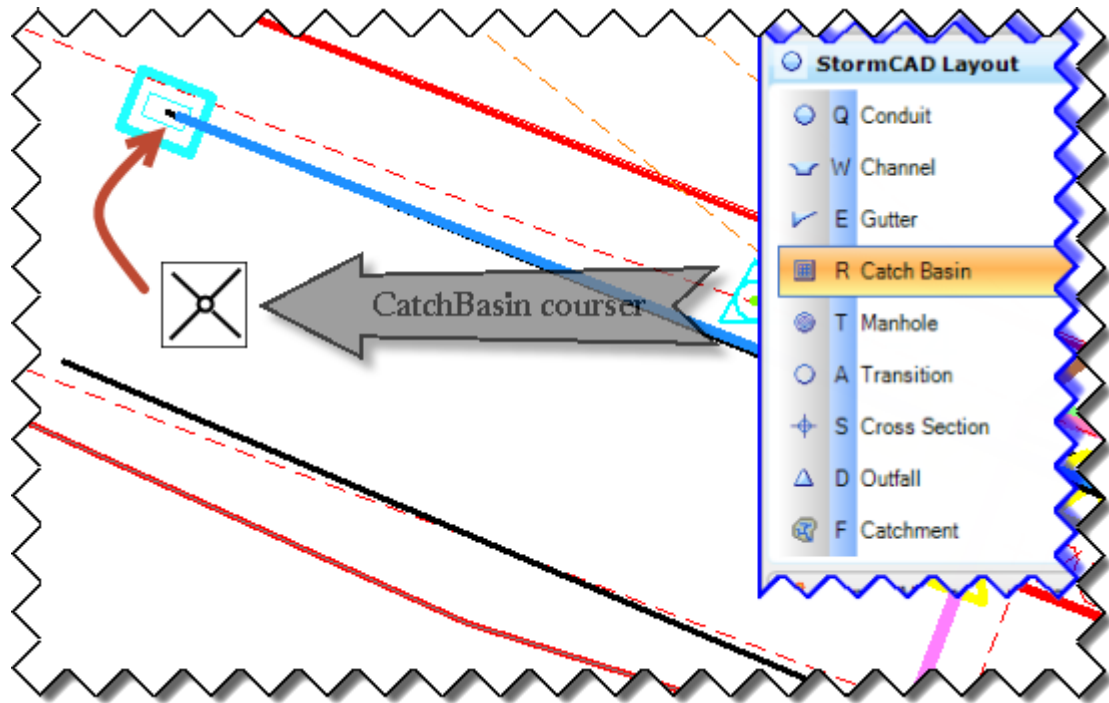

C. Next place the outlet and the conduits (pipes), make sure you change the levels also.
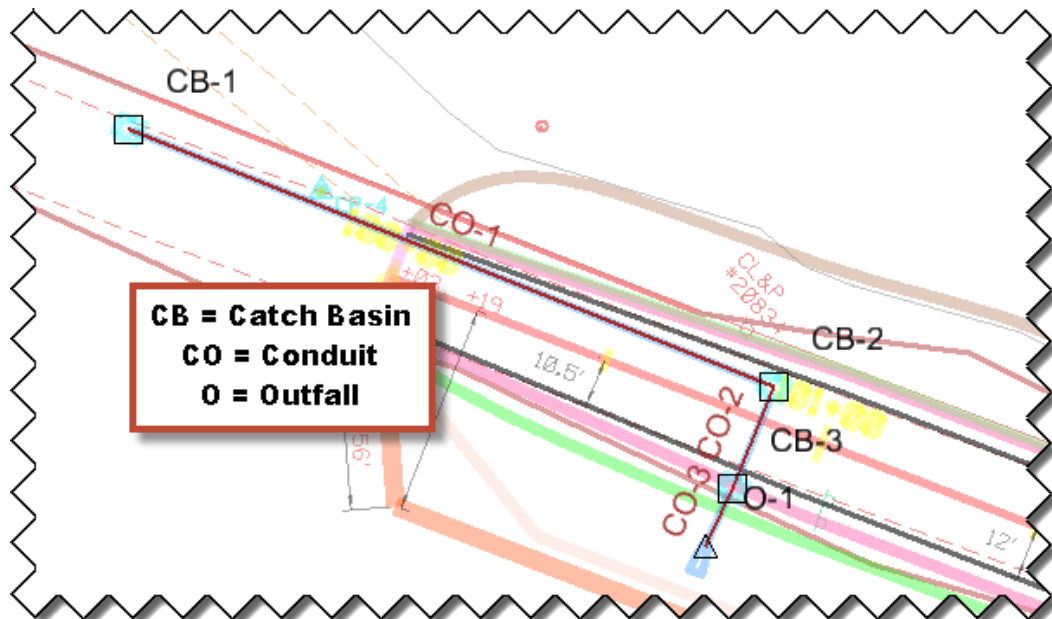
D. Now place the catchment areas for each inlet (catch basin). You can just draw shapes and insert the size or you can draw the actual area shape and have StormCAD calculate the area.
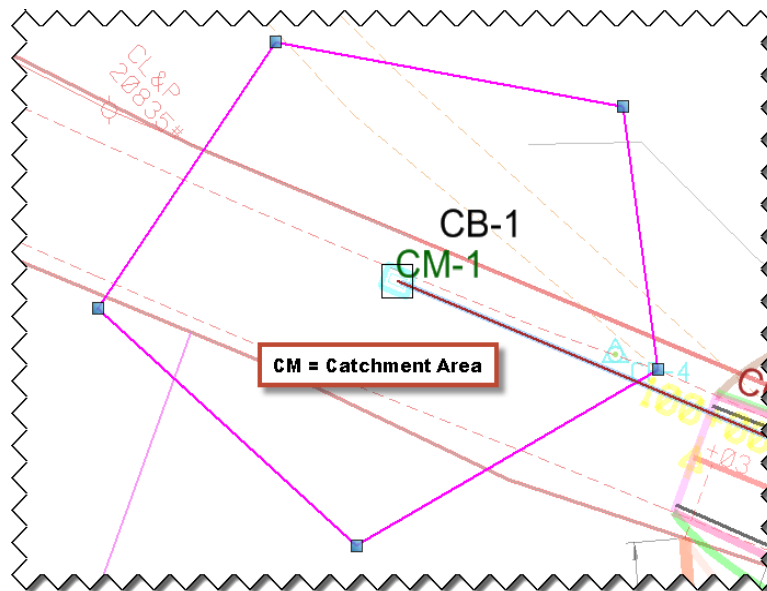
E. Entering data for your system. Using the element selection tool you can modify each elements data to your calculated values for areas, time and elevations, etc.
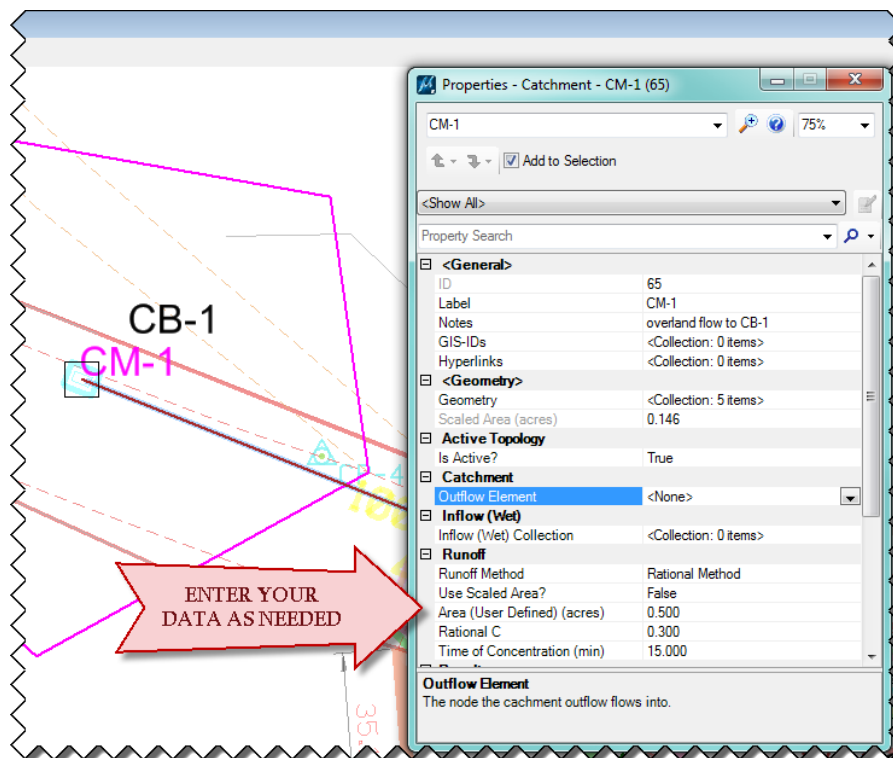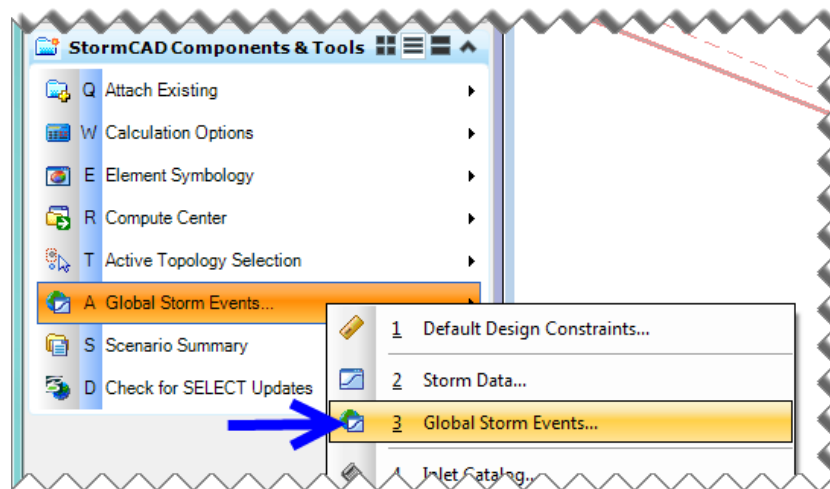

Enter your data using the Properties Editor or using the table for inlet, catchment. See Quick Start Lessons.

Section 4 Analyzing the System

Before you can analyze the system you created you have to select Global Storm Event for your calculations.
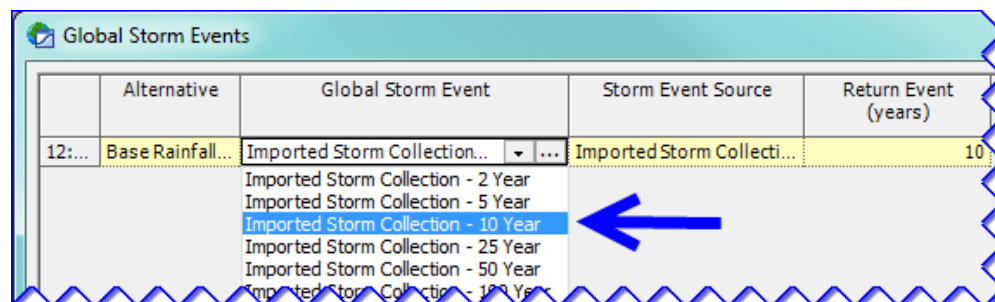
4.1   Global Storm Event

A.   Select **Global Storm Events…** from the StormCAD Components & Tools.

B.   In the Global Storm Events box, click on to open the Storm Data imported previously, see Section 1.2.2 C. Select the **Imported Storm Collection** and **Close**.
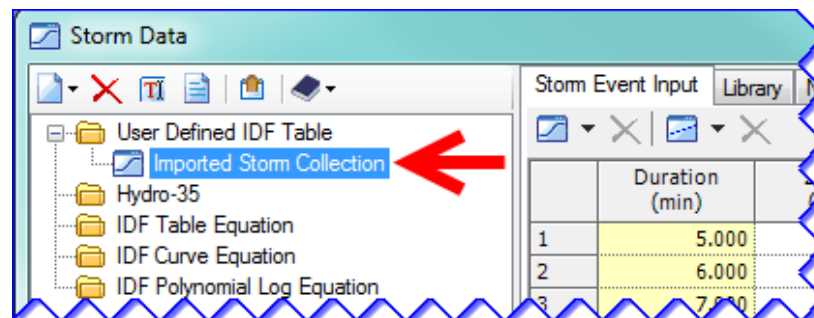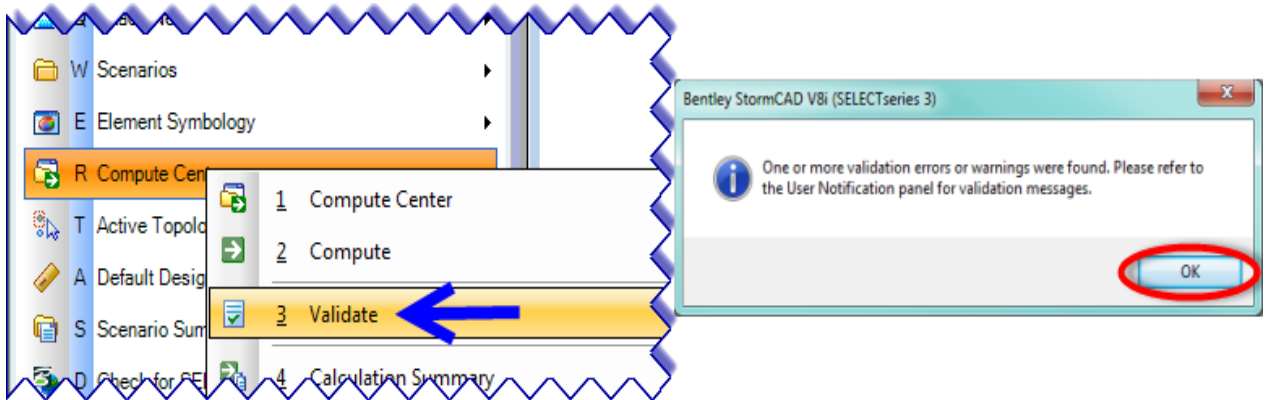

C.   Back in Global Storm Events box **select the year** for your storm event. **Close.**

4.2   Validate and Calculate the Model/System

A. To analyze the system created, select **Compute Center** ➔ **Validate**. You may get a message for errors or warning. Click **OK**.


B. User Notifications will open displaying a list of warnings generated during the validation. There are two types:

- Yellow => does not prevent successful calculation of model (system),
- Red => error must be corrected before model (system) can be computed.
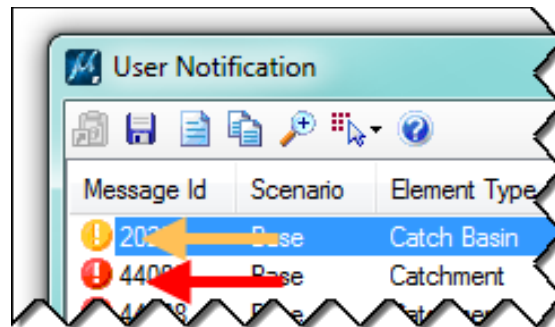
C. Click the **Compute** button to calculate the model (system). After the calculation is complete, the Calculation Executive Summary is displayed. **Review** and **Close**.
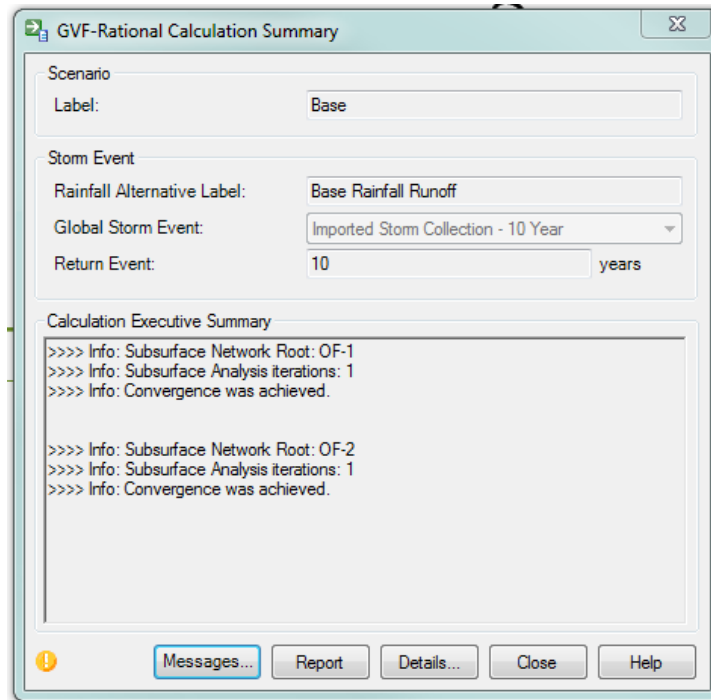

D. After this you can view flex tables and profiles, from the menu bar select **StormCAD → View**.
E. Or generate reports as needed, select **StormCAD → Report.**
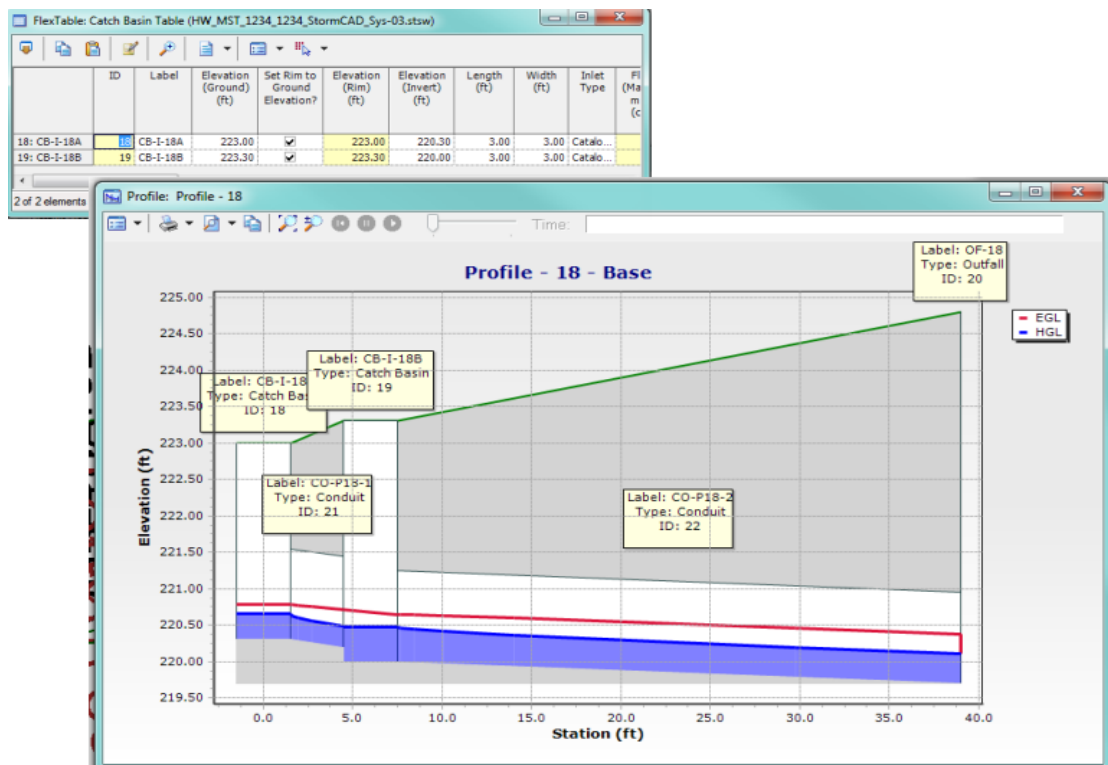
Section 5   Convert/Opening Existing StormCAD Project

Should you need to open an existing StormCAD project please follow these directions. File extensions for StormCAD V8i SS3 have changed from previous versions. New files have to be created.

A. Create a **new *.dgn** file using the **HaestadSeed2d.dgn file,** see Section 1.1.2 .
B. Select from the menu bar **StormCAD → Project → Import → StormCAD Database**
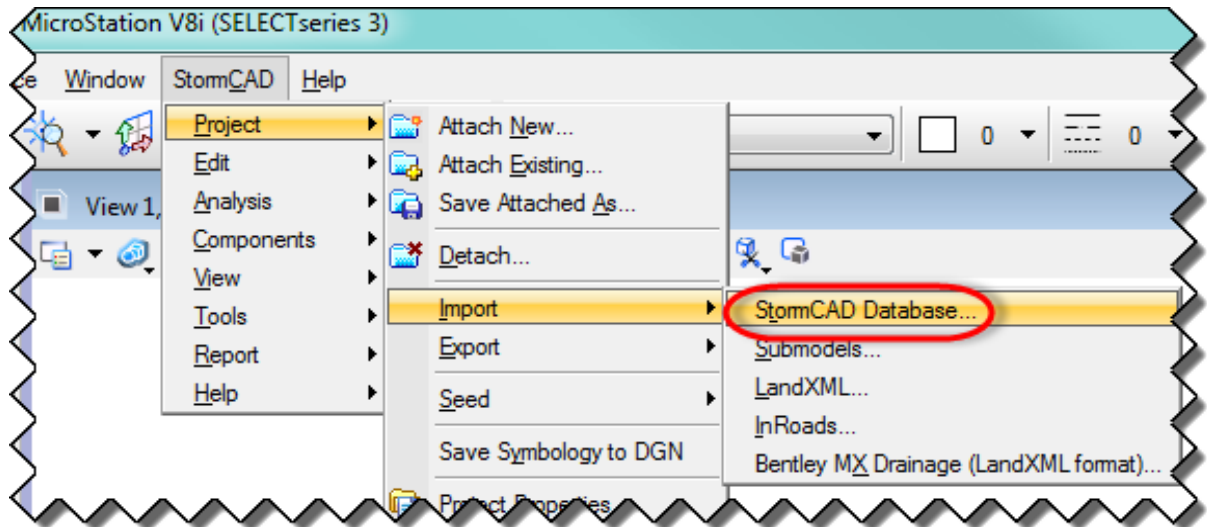
C. In the manager select the **existing Prj_Nbr_Sys_XX.stc.mdb** file. **Open**. The time consuming model update opens. Please be aware if the existing model/system is large it can take some time. Click **Yes**. Files with new extensions will be created by StormCAD V8i SS3.
D. Next it will ask: Do you wish to synchronize the drawing now? Click **Yes**.
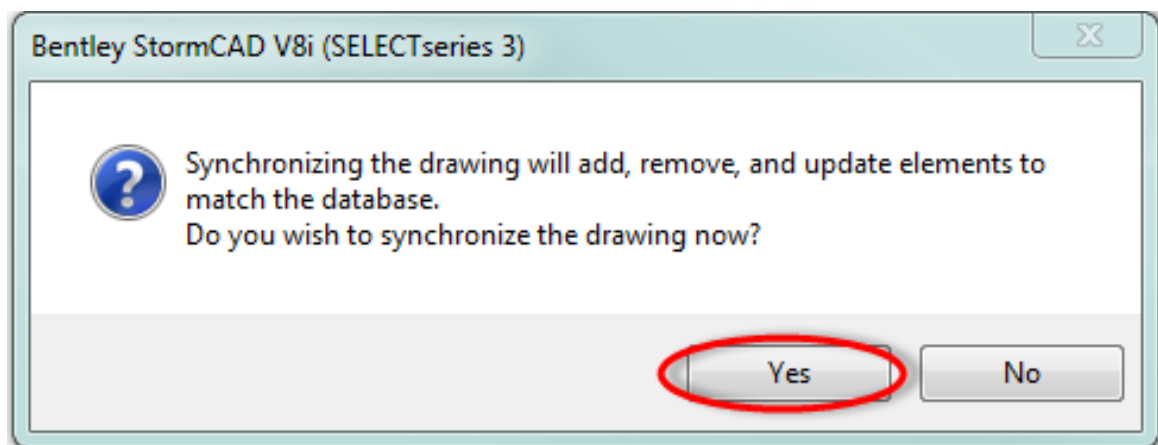
E. Cancel out of ProjectWise Log in if not using Project Wise.

F. The **Save As** box opens. **Save** the file into the project container. You will see the ***.stsw** file extension.
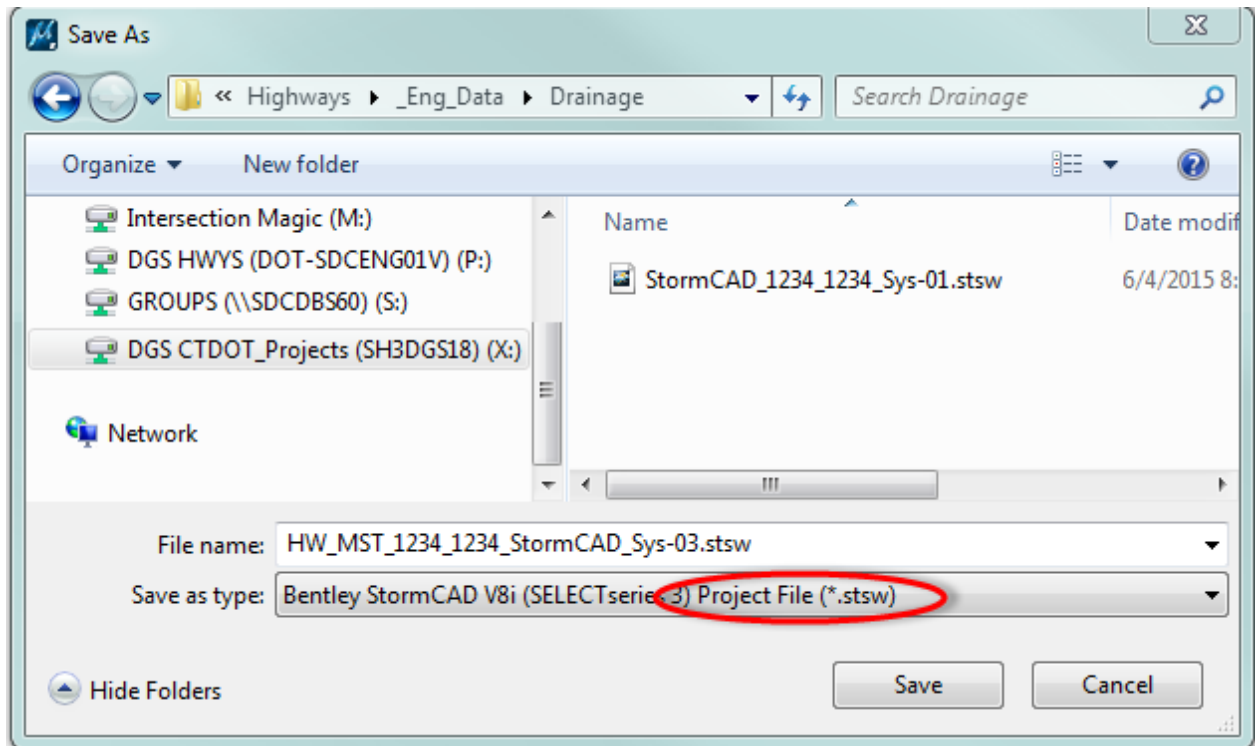
G. StormCAD recreates the schematic in the new DGN-file and creates all the files needed with new extensions.   After completion of the import you can make changes as needed.